

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

– Utility Patent Specification –

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et al.**

Invention:

PORTABLE CRANE/WINCH/HOIST

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Description

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PORTABLE CRANE/WINCH/HOIST

Reference to Related Disclosures

The present application includes and refers to Disclosure Serial No. 500020
10 of August 31, 2001 and also amended Disclosure Serial No. 526798 of February
18, 2003. Both Disclosures are titled Portable Crane/Hoist/Winch.

This application includes a notarized copy of an assignment agreement of
50% ownership from James A. Barger Sr. to Paul J. Hubbell, Jr. (co-owners of “U-
RIG-IT” LLC).

15 Additionally, a Certificate of Mailing and a self-addressed Post Card for
receipt are included.

Technical Fields

The present invention initially relates to the cranes used in the service
20 industry to lift loads to and from a vehicle i.e., trucks and are uni-mounted
assemblies permanently attached/mounted (not portable) to the vehicle body/bed or

vehicle tool box which are exposed to the elements resulting in extra wear and tear and maintenance. Additionally, when lifting, the entire load force bears down on the vehicle.

The “Barger” invention addresses and solves the above problems since it is a portable, lightweight sectional/telescopic device which can be easily assembled/disassembled by only one person, is not permanently attached to a vehicle and exposed to the elements resulting in less maintenance, connects to a trailer hitch and allows the vertical load force to transfer from the vehicle body to the ground terrain via it’s supporting adjustable foot/base.

Additionally, this device is labor friendly and offers a safe work-place environment while reducing man hours and producing increased job performance, especially when comparing the loading/unloading job task by one or more persons in a manual mode which can be unhealthy and injury prone.

This device is a very affordable investment when compared to existing products in the industry.

Background/Prior Art

Many cranes used in the industry today are uni-mounted assemblies that are permanently attached to a truck bed (**Fig. 5**) or vehicle tool box (**Fig. 5A**) and are
5 exposed to the elements resulting in extra maintenance and wear and tear while being restrictive to the loading and unloading area and space available for product storage and transportation. Present system devices do not allow for fast assembly or disassembly since they are constructed in one section that contains the total weight as opposed to the portable light weight sections of the “Barger” invention
10 that are constructed in a fashion that allows one individual to assemble/disassemble, is transferable from one vehicle to multiple others, is not permanently attached to a vehicle’s bed (**Fig. 5**), toolbox (**Fig. 5A**), or trailer and when lifting, allows the load force to transfer from the vehicle to the ground/terrain.

15 The prior art contains a number of teachings of cranes, lifts, hoists some of which are portable and disclosed in the following patents: U.S. Patent 6,065,621 issued to Ray Fatemi and Stan Glas (2000), U.S. Patent 378,457 issued to Vernon H. Page (1997), U.S. Patent 424,374 issued to John Boholst (2000), U.S. Patent

6,024, 374 issued to Delton Friesen and U.S. Patent 5,738,185 Michael R. Sears (1998).

(6,065,621), The Fatemi et al Patent depicts a four wheel vehicle with a permanently mounted crane assembly with a trailer hitch to be connected and
5 towed to various locations by another vehicle. It is portable and constructed with all components sections intact as one and therefore not readily assembled/disassembled. (378,457), The Vernon H. Page Patent Mechanism discloses an “A” frame lift on the horizontal top section supported by two structural legs with flat base feet on one side and two structural legs with wheels
10 on the opposite vertical section, has no motor, is operated by a hand crank and does not attach to a vehicle trailer hitch or function in the same manner as the preferred embodiments of the “Barger” invention. (424,268), the Boholst Device is a hydraulic lift with a limited lift capability as far as vehicles i.e., pick-up trucks or other service vehicles and does not assemble or disassemble readily nor does it
15 attach by means of a trailer hitch to a vehicle and does not extend and rotate 360° to reach objects to be loaded/unloaded. (6,024,374), the Freisen Patent depicts a trailer hitch mounted on a hand truck dolly base that attaches to a lightweight trailer and is used only to move same trailer. There is no lifting capabilities and it

does not perform any of the functions of the “Barger” rotatable crane. (5,738,185),
The Sears apparatus is a lifting device connected to a ladder which is more suitable
for buildings and does not have a motor and would require a locking device to
secure the wheel section and more than one person would be necessary to install,
5 assemble, and operate same. This device does not attach to a vehicle and does not
have the capacity to perform the functions of the rotatable sectional “Barger” crane
which can be assembled and operated by only one person.

The present “Barger” invention addresses and solves the above mentioned
problems when used with the prescribed techniques and provides other advantages
10 over the present means and will be further discussed following.

General Discussion of Invention

- Portable Crane/Winch/Hoist -

As noted in the “Prior Art” above, other devices/cranes (**Figs. 5 & 5A**) are constructed in an undesirable fashion and pose a safety, health and environmental
5 elements risks resulting in unnecessary maintenance from wear and tear (**Figs. 5 & 5A**).

- Methodology -

The present invention relates to a portable Crane/Hoist/Winch lifting,
10 loading/unloading device/system that allows for fast, simple connections, operation, disconnections and storage.

Additionally, this aspect of the invention allows for the small number of light weight sections to easily be lifted and assembled by only one person in the work place industry.

15 Another object of this invention is to provide a time saving labor task since only one individual is required for the total operation.

Accordingly, an object of this “methodology” aspect of the invention is to provide a safer and more secure means of handling, lifting, loading, transferring, unloading and storing a certain category of objects.

An additional object concerns the exposure to the elements of the existing
5 non-portable, permanently attached to truck’s bed or tool boxes, which results in more maintenance, wear and tear and less reliability as well as sometimes protruding objects that are unsafe that can cause injuries and damage to areas that are unfavorably restrictive, while in use or in only a transportation mode.

10 **First Preferred Embodiment**

After preparing a trailer hitch (**Figs. 1+**) on a vehicle for access, the male proximate end of the tubular adapter section is inserted into the female square tubular trailer hitch receptacle and pinned, while the opposite distal female end of the square tubular adapter accommodates a tubular adjustable/telescopic and
15 pinned male proximate end at 90° vertical rise which has a female distal end that receives a male proximate end of a round adjustable vertical rise section for a distance then extends at approximately 30° horizontal rise and contains a motorized or manual winch in the 30° arc, a cable/pulley at the distal end with a

lifting hook on the cable/end. This boom section is supported structurally both at the top and bottom.

Once assembly, is in place, the load/base foot support is adjusted to the terrain and after attaching the lifting hook at the end of extended cable from the motorized winch/or hand crank, an object with an eye bolt or harness can be lifted vertically and rotated 360° horizontally with a handle mounted on the vertical rise rotatable section while suspended then lowered onto the desired location of a vehicle such as a truck or other type platform while the reverse operation would be used to unload an object.

The motorized winch has a reversing switch in the power supply cord for this operation and the hand crank is manual.

Second Embodiment

After preparing the trailer hitch (**Fig. 4+**) of a vehicle for access, the male proximate end of the tubular adapter section is inserted into the female square tubular trailer hitch receptacle and pinned, while the opposite distal female end of the square tubular adapter accommodates a tubular adjustable/telescopic and pinned male proximate end of a transition from horizontal tubular to round pipe at

90° vertical rise which has a female distal end that receives a male proximate end of an adjustable vertical rise first section for a distance, then extends at approximately 45° horizontally with a female distal end that accepts a second section with a male proximate end extends for another distance with a 45°
5 horizontal rise and contains a motorized or manual winch in the arc of the distal boom section that rises approximately 30° horizontally and has a cable/pulley at the distal end with a lifting hook at the end of the extended cable end and is supported structurally, top and bottom.

Once assembly is in place, the load/base foot support is adjusted to the
10 terrain and after attaching the lifting hook at the end of the extended cable from the motorized winch/hand crank an object with an eye bolt or harness can be lifted vertically and rotated up to 360° horizontally with a handle mounted on the vertical rise section while suspended then lowered onto the desired location of a vehicle such as a truck or other type platform while the operation would be used to unload
15 an object.

The motorized winch has a reversing switch in the power supply cord for this operation, while the hand crank is manual.

Modes for Carrying Out the Invention

- Structural Details of 1st Embodiment (Figs. 1A+) -

After the vehicle selected to be used is properly parked near the object/load to be moved, the vehicle engine turned off, and the parking brake engaged,
5 assembly may safely begin.

Referring to the four (4) major components shown in **Fig. 1A** the Portable Crane/Winch/Hoist can be safely and rapidly assembled by only one person following four easy steps:

Step No. 1 – Start by inserting the proximate end of the horizontal 90°
10 portable mounting hitch **2**, into the distal end of the vehicle tubular square female receptacle **1**, locking in place with pin **1a**.

Step No. 2 – Prepare the tubular square to round pipe 90° angular transition member **3**, by threading/turning the load bearing base/foot support lock nut **4c**, until the nut bottoms out on the foot **4b**, the foot **4b** and locknut **4a** is then threaded
15 into the distal end of the transition section **3**.

Step No. 3 – The square tubular proximate end of the 90° transition member **3**, is now inserted into the female distal end of the square portable mounting hitch adapter **2**, transition member **3** is then locked with pin **2a**. This prepares and

provides for a rigid safe, stable load bearing platform for the rotatable Crane/Winch section of the assembly 4.

Step No. 4 – The round male proximate end of the winch assembly 4 is now inserted into the round female distal end of transition member 3, the base foot 4b is
5 adjusted to the terrain/ground and lock/nut 4a tightened. The pin 3a, is only used as an internal support height adjustment base and as a roller bearing effect for the male distal end of rotatable member 4.

Modes for Carrying Out the Invention

10 - *Structural Details of 2nd Embodiment (Figs. 4A+)* -

After the vehicle selected to be used is properly parked near the object/load to be moved, the vehicle engine turned off, and the parking brake engaged, assembly may safely begin.

Referring to the four (4) major components shown in **Fig. 4A** the Portable
15 Crane/Winch/Hoist can be safely and rapidly assembled by only one person following four easy steps:

Step No. 1 – Start by inserting the proximate end of the horizontal 90° portable mounting hitch **2**, into the distal end of the vehicle tubular square female receptacle **1**, locking in place with pin **1a**.

Step No. 2 – Prepare the tubular square to round pipe 90° angular transition member **3**, by threading/turning the load bearing base/foot support lock nut **4c**, until the nut bottoms out on the foot **4b**, the foot **4b** and locknut **4c** is then threaded into the distal end of the transition section **3**.

Step No. 3 – The square tubular proximate end of the 90° transition member **3**, is now inserted into the female distal end of the square portable mounting hitch adapter **2**, transition member **3** is then locked with pin **2a**. This prepares and provides for a rigid safe, stable load bearing platform for the rotatable Crane/Winch section of the assembly **Fig. 4**.

Step No. 4 – The round male proximate end of the female distal end that receives the male proximate end of adjustable vertical rise first section **8**, w/handle for a distance, then extends at approximately 45° horizontally with a female distal end that (Step 5) connects to a second section **9** w/handle **9a** with a male proximate end and extends for another distance with a 45° horizontal rise and contains a motorized or manual winch **6**, in the arc of the distal boom section that rises

approximately 30° horizontally and has a cable **6a**, pulley **6b**, at the distal end with a lifting hook **6c** at the end of the extended cable end and is supported structurally, top **10** & bottom **10b**.

Once assembly is in place, the load/base foot support **4b** is adjusted and
5 locked to the terrain and after attaching the lifting hook at the end of the extended cable **6a** from the motorized winch/hand crank **6** and object with an eye bold or harness can be lifted vertically and rotated up to 360° horizontally with a handle **9a** mounted on the vertical rise section while suspended then lowered onto the desired location of a vehicle such as a truck or other type platform while the reverse
10 operation would be used to unload an object.

The motorized winch has a reversing switch **7b** in the power supply cord **7** for this operation, while the hand crank is manual.

This completes the mechanical section of the 1st and 2nd embodiment assemblies.

15 - *Electrical (Figs. 1A & 4+)* -

The electrical power for the assembled Crane/Hoist is provided by simply connecting the male plug **7a**, of cable **7** into the vehicles female power receptacle.

Other power kits can be used if the winch motor is 120 volts or 208/230 volts single phase.

- Winching Operation -

Following the same steps of assembly and mounting as the 1st embodiment **Fig. 1A** (Steps 1-4), but eliminating section 2, 90° angular tubular component and connecting male proximate end of tubular horizontal section **3p**, into female receptacle **1**, and pinning **1a**, Section 4 male proximate round end is inserted into female round distal end of vertical rise section **3p**, and pinned **3a**, to form a non-rotatable perpendicular rigid position for a winching operation.

This desired type operation is used when a close distance to the load/object is impossible to reach due to a restrictive area limiting the vehicle to a reasonable remote distance.

The operational mode is to energize switch **7b**, to release cable **6a**, with lifting hook **6c** for a distance to the remote location of the load/object, then attaching the lifting hook **6c**, to object and energizing winch motor **6**, with switch

7b, to pull object close enough to vehicle and then proceeding with regular lifting, loading/unloading steps of 1st embodiment Fig. **1A**.

Brief Description of Drawings

5 For a further understanding of the nature and objects of the present invention, reference should be had to the following detailed description, taken in conjunction with the accompanying drawings, in which like elements are given the same or analogous reference numbers and wherein:

Figure 1A is a sectional/exploded isometric view of a first, currently
10 preferred, exemplary embodiment of the present invention, showing a tubular female trailer hitch receiver **1**, a pin **1a**, a 90° horizontal angular tubular adapter section **2**, a pin **2a**, a telescopic square tubular transition to round pipe welded angular vertical rise section **3**, a pin **3a**, an adjustable load support base/foot **4b**, a
15 app'x. 30° horizontal rise **4**, a handle **4a**, an adjustable telescopic boom extension **5**, a pin **5a**, a welded base for a bolted winch motor or hand crank **6**, a cable **6a**, a pulley **6b**, a lifting hook **6c**, a power cable **7** with switch **7b**.

Figure 1 is an assembled isometric view of the first preferred embodiment mounted to a truck trailer hitch facing outwardly from the rear with tailgate up/closed.

Figure 2 facing outwardly with tailgate down/open.

5 **Figure 2A** facing inwardly with tailgate down/open.

Figure 3 is a tubular to round transition adapter (**3p**) mounted to the female trailer hitch 1, a pin 1a, perpendicular to the bumper of the vehicle with a vertical rise of 90°.

Figure 4 is an alternate preferred embodiment exploded isometric view
10 depicting a first pipe rotatable section with a 45° vertical to horizontal rise for a distance **8**, a handle **8a**, connecting to the receiving end of **3**, on the proximate end with the distal female end coupling with the proximate end of a second boom section that rises from vertical 30° horizontally **9**, a handle **9a**, a winch motor welded base for bolted support of motor/hand crank **6**, a cable **6a**, a pulley **6b**, a
15 lifting hook **6c**, on the distal end, and each of these two sections **8**, & **9**, are 360° rotatable forming an extended 90° long sweeping offset.

Figure 4A is an isometric exploded view of the alternate preferred embodiment facing outwardly.

Figure 4B shows section **3p** perpendicular to bumper and pinned.

Figure 4C is an exploded isometric view of **Figure 4B**.

Figure 5 depicts a perspective view of present/prior non-portable crane permanently attached to a truck body/bed.

5 **Figure 5A** a uni-mounted non-portable crane permanently mounted to a truck tool box.